PROBLEMS.

23. Proposed by G. B. M. ZERR, A. M., Principal High School, Staunton, Virginia.

Pliny says, "Thales determined the cosmical setting of the Pleiades to have happened in his time 25 days after the vernal equinox." Determine the time when Thales lived from the following data:—Latitude of Miletus 37° 30′, the precession of the equinox 50″.34 annually, the R. A. of Alcyon (η Tauris) Jan. 1, 1895, 3h. 41m. 15sec. declination 23° 46′ 49″ N.

24. Proposed by D. H. DAVISON, Minonk, Illinois.

For the purpose of locating the most eligible point for a county seat, it is required to determine the center of a county whose dimensions are as follows: Beginning at the S. W. corner. Thence east 15 miles, thence N. 33¾ miles, thence W. 6 miles to north end of a meridian line running south through the county; thence southwesterly to a point being 6 miles west from the meridian line and 9¾ miles south of its north end. Thence S. 3 miles, thence W. 3 miles, thence S. 21 miles to place of beginning.

[NOTE.—A solution to problem 12 will appear in March number. EDITOR.]

QUERIES AND INFORMATION.

Conducted by J. M. COLAW, Monterey, Va. All contributions to this department should be sent to him.

DR. HALSTED'S LATEST TRANSLATION.

By LEONARD E. DICKSON, M. A., Fellow in Mathematics, University of Chicago, Chicago, Illinois.

It is a matter worthy of remark that, already master of four modern and two dead languages and a translator from several of them of no little repute, Dr. Halsted has vigorously attacked the Russian language with its 36 strange hieroglyphics and now gives to the world an insight into the best scientific thought of Russia, in the shape of a translation of the address by Prof. Vasiliev, President of the Physico-Mathematical Society of Kasan, pronounced last year at the meeting of the Imperial University of Kasan in commemoration of their illustrious compatriot Lobachevsky.

From every one devoted to Mathematics or Philosophy, or indeed to the highest advance of human thought in any form, this address will call forth the deepest admiration for Lobachevsky, now recognized as one of the greatest

intellectual revolutionizers the world has ever had. It will arouse a deeper enthusiasm for scientific achievement and widen the horizon of every reader.

Surely no mathematician should miss this gem from fartherest Russia, which, thanks to the rare enthusiasm and energy of Professor Halsted, is easily accessible to all.

A REPLY TO PROFESSOR WHITAKER.

By H. W. DRAUGHON, Olio, Mississippi.

Professor Whitaker, in his reply, devotes a great part of his space to attacking positions which I have never occupied. I will, therefore, consider those points only, in his article, which bear on the subject under discussion. In regard to the expression, $3+\sqrt{2}$, I will state that the sign before $\sqrt{2}$ does not indicate that the positive value of $\sqrt{2}$ is to be taken.

Professor Whitaker does not deny that I find the value of x^2 correctly from the equation, $x^2+2x=3$; he only claims that this equation is not similar to the equation $\sqrt{(x+4)}-\sqrt{(x-4)}=4$. In proof of this, he asserts that, the product of the equation, $x^2+2x-3=0$, and the equations formed by "changing signs" is of the 8th degree. This is not true, when we consider x^2, whose value is required, as the unknown quantity.

I beg leave to remind Professor Whitaker that the performance of this operation on L. B's equation gives an equation of the 2nd degree with reference to $\sqrt{(x+4)}$ or $\sqrt{(x-4)}$. In my example, the produce, is of the 4th degree with reference to x^2. So it appears that the dissimilarity is not great enough to consider, after all.

Let us take a simple equation; $2+x=0$....(1), for instance. We readily find $x^2=4$....(2). Now Professor Whitaker claims that the value of x is essentially positive; $\therefore$ from (2) $x=+2$. This value fails to prove when substituted in (1). Let us now multiply as Professor Whitaker suggests, then we have, $(2+x)(2-x)=4-x^2=0$, an equation of the first degree with reference to x^2.

We have here, therefore, an equation which has very much less than "a quarter of a chance of having one root",-if we preclude as Professor Whitaker does, negative values of an expression preceded by the sign $+-$, and, at the same time the product of the equation and the equation obtained by "changing signs" is of the first degree.

I will close, by the application of the principle I gave in my former article, to the solution of L. B's equation. We have, $\sqrt{(x+4)}-\sqrt{(x-4}=4...(1)$. Put $x+4=y^2$....(2), and $x-4=z^2$....(3); then (1) becomes, $y-z=4$ ...(4). From (2) and (3), we obtain, $y^2-z^2=8$....(5). From (4) and (5), we find, $y=3$, and $z=-1$. From (2) or (3) we now find, $x=5$. Now, I do not think

there is any hocus-pocus about this. It makes the question clear and enables us to find out everything about the given equation. I feel sure that this view of the matter is in strict accordance with the principles of mathematics.

WANTED.—Dr. G. B. Halsted, Professor J. N. Lyle, Counsellor Dolman, and all other apostles and post-graduate disciples of Lobatschewsky, to inform the numerous readers of the MONTHLY wherein consists *the difference* between the Euclidian Geometry and the Non-Euclidian Geometry. What is *Ideal Space? Hyper-space? Pseudo-spherical*, as used by Professor Lyle in the November MONTHLY.—READER.

NOTE.—Dr. Artemas Martin pointed out to me in a letter (which I misplaced at the time and only recently recovered) that the expressions $m+\sqrt{(2mn)}, n+\sqrt{(2mn)}, m+n+\sqrt{(2mn)}$, given in my article in the January '94 number of the MONTHLY, for the sides of a right triangle, can be reduced to Maseres' expressions, p^2-q^2, $2pq$, p^2+q^2, respectively, by substituting $(p-q)^2$ for m and $2q^2$ for n. I wish to thank Dr. Martin.

LEONARD E. DICKSON, M. A.

EDITORIALS.

THIS number of the MONTHLY was mailed February 28th. It has been cut short, but our readers may look for a good, full number in March.

MARCH Number will be mailed between the 20th and 25th of the month. If you do not get your copy soon after the 25th write to the publishers at once.

IF any of our subscribers have not received any one of the 14 numbers of the MONTHLY already issued write the publishers, and if it is possible, the missing copy will be sent.

AT THE last meeting of the American Mathematical Society, Dr. Macfarlane read a paper on the *Principles of Differentiation in Space-analysis*, which contains among other results, the true generalization for space of Taylor's Theorem. Dr. Macfarlane says, there are many indications pointing to this as the coming subject.

OUR readers will be disappointed because of the absence of the portrait of Professor Chauvenet. No pains were spared on our part in trying to obtain a plate, but our efforts were futile. We may be able to secure a portrait before the end of the year and if we do, will send each of our subscribers a copy, so that it may be bound up with the year's volume.

ERRATA IN PROFESSOR DICKSON'S ARTICLE: p. 9, l. 11 read $s=$or$<(m-1)$ 12; l. 11 read $-A_{m-s}$; p.40, ls. 34 and 36 for $\pm A_{p-1}$ read $\mp$; l. 35, for $\pm A_{p-2}$ and $\pm A_p$ read $\mp$; l. 37, for $A_1+2=0$ read not$=0$.